

Annual Index-Volume 55

LIST OF ISSUES IN VOLUME 55, January 1977 to December 1977

No. 1	January	Pages 1— 28
" 2	February	29— 56
" 3	March	57— 88
" 4	April	89—116
" 5	May	117—144
" 6	June	145—172
" 7	July/August	173—200
" 8	September	201—228
" 9	October	229—256
" 10	November	257—284
" 11	December	285—324

A

- Abed, Mark I., *Estimating demand for new products* 155-158
A better way of designing Tandem Tie Trunk Networks, Norman Shaye 220-225
 ADAPTIVE DELTA MODULATION 118-123
 Albert, William G., *D4: up-to-date channel bank for digital transmission plant* 66-72
 Almqvist, Richard P., *1A ESS: newest, largest-capacity local switch cuts over early* 15-20
AMIS: a sharp eye on integrated-circuit masks, Tracy S. Kinsel 36-42
 Arnold, Thomas F., *TSPS goes to the country* 146-153
 ARTHUR, JOHN 110
 ATME2 (Automatic Transmission Measuring Equipment) 164-169
 ATMOSPHERE (pollution) 43-49
 Aveyard, Robert L., *No. 4 ESS—through a wide-angle lens* 290-295

B

- Bakanowski, Alfred E., *Light-emitting diodes: lifetime lights illuminate more Bell System equipment* 159-163
 Baltz, Jr., Leonard E., *New 4A trunk circuits save space and power* 50-54
 Barber, Mark R., *Integrated circuit testing* 124-130
 Barlay, Karl C., *Testing overseas trunks—automatically* 164-169
 Berman, Roger K., *Interoffice transmission for the city: analyzing the options* 174-179

- Bidlack, Richard H., *COM KEY™ telephone systems—flexibility for small, growing businesses* 78-85
 BISCUM (Business Information Systems Communications) 265-270
 BISCUS/FACS CONVERSION 103-108
BISCUS/FACS processes service orders automatically, John J. Yostpille 96-102
 Blair, Billy W., *Developing new features for No. 4 ESS* 296-300
 Blomster, Paul R., *Keeping the Bell System in tune and on time* 137-142
 Bolsky, Morris I., *Resource Engineering and Management: a case history* 265-270
 Boyle, Jay T., *Resource Engineering and Management: a case history* 265-270
 BPERM (BISCUM Performance and Evaluation Model) 268-270
 Brolin, Stephen J., *The subscriber loop carrier system gets even better* 118-123
 BUSINESS INFORMATION SYSTEMS CUSTOMER SERVICES/FACILITIES ASSIGNMENT AND CONTROL SYSTEM (BISCUS/FACS) 96-102

C

- Carney, David L., *1A ESS: newest, largest local switch cuts over early* 15-20
 CENTRALIZED AUTOMATIC REPORTING ON TRUNKS (CAROT) 301
 CENTRALIZED INVENTORY MANAGEMENT SYSTEM/LOW VOLUME 180-186

Acronyms and abbreviations in this issue

CAROT	Centralized Automatic Reporting on Trunks	MF	Multi-Frequency
CCIS	Common Channel Interoffice Signaling	MHz	Megahertz
CCITT	Comité Consultatif International Telegraphique et Telephonique	ODA	Office Data Assembler
CCSA	Common Control Switching Arrangement	PBX	Private Branch Exchange
CMS	Circuit Maintenance System	PCM	Pulse Code Modulation
CRT	Cathode Ray Tube	SP1	Signal Processor 1
DDD	Direct Distance Dialing	SP2	Signal Processor 2
DOC	Dynamic Overload Control	SP2/DT	Signal Processor 2/Digroup Terminal
DP	Dial Pulse	4EO	No. 4 ESS Original generic issue
ESS	Electronic Switching System	4E1	No. 4 ESS First subsequent generic issue
INWATS	Inward Wide Area Telecommunications Service	4E2	No. 4 ESS Second subsequent generic issue
		4E3	No. 4 ESS Third subsequent generic issue



Chang, Rau C., *Managing inventories of low-volume station products: the computer approach* 180-186
 CHANNEL BANK (D4) 66-72
Checking out semiconductor memories for electronic switching systems, Carl W. Green 131-136
 CHEMISTRY OF ATMOSPHERE 43-49
 CHO, ALFRED Y. 109, 110
 CICS (C Inventory Control System) 181, 185-186
 CIMS/LV (Centralized Inventory Management System/ Low Volume) 180-186
 C INVENTORY CONTROL SYSTEM 181, 185-186
Circuit conditioning on the customer's premises, J. David Igleheart 90-95
 CIRCUIT LAYOUT RECORD 5-6
 CIRCUIT LAYOUT RECORD CARD 6
 CIRCUIT MAINTENANCE SYSTEM 1 (CMS 1) 301
 CIRCUIT ORDER CONTROL SYSTEM 73-77
 Cirillo, Anthony J., *Switching and signal handling* 310-315
 Cirillo, Carl, *Controlling circuit orders with TIRKS* 73-77
 COCS (Circuit Order Control System) 73-77
 COM KEY™ TELEPHONE SYSTEMS
 CONSOLES AND TELEPHONES 78-85
 718 KEY-TELEPHONE 78-85
 734 KEY-TELEPHONE 78-85
 1434 KEY-TELEPHONE 78-85
 2152 KEY-TELEPHONE 78-85
 COM KEY™ telephone systems—*flexibility for small, growing businesses*, Richard H. Bidlack, Ernest G. DeNigris, and Richard K. Thompson, Jr. 78-85
 COMMON LANGUAGE LOCATION IDENTIFICATION (CLLI) 192-197
 COMPUTER SYSTEMS (BISCUS/FACS) 96-102
 COMPUTERIZED ASSIGNMENT OF FACILITIES (BISCUS/FACS) 96-102
 COMSAT LABORATORIES 205
 COMSTAR SATELLITE 237-242
Controlling circuit orders with TIRKS, Carl Cirillo 73-77
 CONVERSION (BISCUS/FACS) 103-108
 CROSS-ELASTICITY ANALYSIS 155-158
 CROSS PROGRAM 155-158
 CRYSTAL GROWTH 109-114
 CRYSTAL OSCILLATORS 137-142
 CSEPA (Central Station Electrical Protective Association) 243-247
 CUSTOM CIRCUIT COMPONENTS 208-214
 CUSTOMER PREMISES FACILITY TERMINALS 90-95

D

Data-base administration: managing the giant, Roy A. Jensen and Dennis H. Schnack 301-304
 DATA COMMUNICATIONS (Transaction Network) 8-14
 DATA STATION SELECTOR 8-14, 243-247
 DATA TEST SET, 921A 21-26
 DATAPHONE® Select-A-Station Service: *improved transmission facilities for alarm systems*, Richard C. Matlack and Donald J. Render 243-247
 DEFECT DETECTION 36-42
 DeNigris, Ernest G., *COM KEY™ telephone systems—flexibility for small, growing businesses* 78-85
 DEPIC (Dual Expanded Plastic Insulated Conductor) 258-264
 Desjardins, Raymond R., *HORIZON™ Communication System: custom service for small businesses* 271-275
Developing new features for No. 4 ESS, Robert A. Reed, J. Bruce Synnott, III, and Billy W. Blair 296-300
 DeVore, Richard E., *Testing overseas trunks—automatically* 164-169
 D4 CHANNEL BANK 66-72
D4: up-to-date channel bank for digital transmission plant, William G. Albert, Will Gaunt, James F. Oberst, and David C. Weller 66-72
 DiCarlo-Cottone, Melchior J., *Network management—beating the bottlenecks* 305-309

DIMENSION® CUSTOM TELEPHONE SERVICE 91
DIMENSION® PBX COMPONENTS 210-214
 Dinn, Neil F., *Preparing for future satellite systems* 236-242
 DIP (Dual In-line Package) 208-214
 Donovan, Richard C., *Recycling PVC* 215-219
 DRUM RECORDER 249-252

E

Easing the change to BISCUS/FACS, Walter C. Johnson 103-108
 ECHO CANCELLER 204
 ECHO SUPPRESSOR TERMINAL 207
 ELECTRONIC BANKING 8-14
 ELECTRONIC SWITCHING SYSTEMS 131-136
 EPLANS PROGRAM: MATFAP 174-179
 ESS (1A) 15-20
 ESS REPLACEMENT PLANNING 58-65
Estimating demand for new products, Mark I. Abed and Janet L. Yaple 155-158
 Estvander, Robert A., *1A ESS: newest, largest-capacity local switch cuts over early* 15-20

F

FACILITY PLANNING 174-179
 Falk, Robert J., *New 4A trunk circuits save space and power* 50-54
 FEPS (Facility and Equipment Planning System) 5
 FERETS (Foreign Exchange Routine Evaluation Testing System) 164-169
 Fitch, Scott M., *New testing capabilities for data services—the 921A* 21-26
 Fleckenstein, William O., *No. 4 ESS—symbol of Bell System strength* 288-289
 Forster, John H., *Polychip DIPs: quick-turnaround custom circuit designs* 208-214
 Foster, Robert W., *No. 3 ESS improves telephone service for country customers* 231-235
 4A CROSSBAR TRUNK CIRCUITS 50-54
 FREQUENCY CONTROL 137-142
 FUNCTIONAL TESTING, IC 124-130

G

GATE ARRAYS 187-191
 Gaunt, Will, *D4: up-to-date channel bank for digital transmission plant* 66-72
 GENERIC PROGRAM DEVELOPMENT (No. 4 ESS) 299
 Gnanadesikan, Ramanathan, *Understanding atmospheric processes* 43-49
 Gomez, Ernest, *Network management—beating the bottlenecks* 305-309
 Green, Carl W., *Checking out semiconductor memories for electronic switching systems* 131-136

H

Hanson, Bruce L., *Human factors engineering in the outside plant: bringing out the best* 30-35
 Harrington, George E., *The subscriber loop carrier system gets even better* 118-123
 Haverty, Michael B., *No. 4 ESS—through a wide-angle lens* 290-295
 Helder, George K., *Improving transmission on domestic satellite circuits* 202-207
 HIGH-FREQUENCY TRANSMISSION 237-242
HORIZON™ Communication System: custom service for small businesses, Raymond R. Desjardins, John A. Miller, and C. Dennis Weiss 271-275
HORIZON™ Communication System—innovation for the business customer, Charles R. Lindemulder, Charles E. Nahabedian, and David C. Trimble 276-281
 HUMAN FACTORS ENGINEERING 30-35
Human factors engineering in the outside plant: bringing out the best, Bruce L. Hanson, Edmond W. Israelski 30-35

I

- IGFET (Insulated-Gate Field-Effect Transistor) 132, 133, 134
 Igleheart, J. David, *Circuit conditioning on the customer's premises* 90-95
Improving recorded-announcement service with magnetic bubbles, Ronald D. Trupp 249-252
Improving transmission on domestic satellite circuits, George K. Helder and Peter C. Lopiparo 202-207
 INTEGRATED CIRCUIT MASKS 36-42
 INTEGRATED CIRCUITS 208-214
 INTEGRATED CIRCUITS (gate arrays) 187-191
Integrated circuit testing, Mark R. Barber and Alfred Zacharias 124-130
Interoffice transmission for the city: analyzing the options, Roger K. Berman and Sam H. Parker 174-179
 INVENTORY MANAGEMENT 180-186
 IPVC (Irradiated Polyvinyl Chloride) 215-219
 IRRADIATED POLYVINYL CHLORIDE (IPVC) 215-219
 Israelski, Edmond W., *Human factors engineering in the outside plant: bringing out the best* 30-35

J

- Jenness, Robert V., *Switching and signal handling* 310-315
 Jensen, Roy A., *Data-base administration: managing the giant* 301-304
 Johnson, Walter C., *Easing the change to BISCUS/FACS* 103-108
 Johnston, Stanley W., *Planning local switching replacement with ESS: when and how?* 58-65

K

- Katz, David, *Logic gate arrays: "catalog" ICs with custom advantages* 187-191
Keeping the Bell System in tune and on time, Paul R. Blomster 137-142
 Kettler, Herbert W., *Planning local switching replacement with ESS: when and how?* 58-65
 KEY-SERVICE UNITS 78-85
 KEY-TELEPHONE UNITS 78-85
 Kinsel, Tracy S., *AMIS: a sharp eye on integrated-circuit masks* 36-42

L

- LAMP (Logic Analyzer for Maintenance Planning) system 124-130
 LASERS, HETEROSTRUCTURE INJECTION 112-113
 LEDs (Light-Emitting Diodes) 159-163
 Leer, Ivan D., *Timing—marching to the same drum* 316-318
 Leopold, G. Robert, *The subscriber loop carrier system gets even better* 118-123
Light-emitting diodes: lifetime lights illuminate more Bell System equipment, Alfred E. Bakanowski 159-163
 Lindemulder, Charles R., *HORIZON™ Communication System—innovation in system design and development* 276-281
 LOAD TEST LABORATORY 268-270
 LOCAP (Low Capacitance) cable 258-264
 LOCATION IDENTIFICATION CODE 192-197
Logic gate arrays: "catalog" ICs with custom advantages, David Katz 187-191
 Lopiparo, Peter C., *Improving transmission on domestic satellite circuits* 202-207
 LSRP (Local Switching Replacement Planning) 58-65

M

- MAGNETIC BUBBLES 249-252
Managing inventories of low-volume station products: the computer approach, Rau C. Chang 180-186
 MARKET ANALYSIS 155-158

- MAT cable supplies low-cost trunks under city streets*, Wendell G. Nutt, George H. Webster, and Thomas G. Vincent 258-264
 MATEWAN, WEST VIRGINIA, No. 3 ESS FOR A FLOODED 235
 MATFAP (Metropolitan Area Transmission Facility Analysis Program) 5, 174-179, 260
 Matlack, Richard C., *DATAPHONE® Select-A-Station Service: improved transmission facilities for alarm systems* 243-247
 MBE (Molecular Beam Epitaxy) 109-114
 McAfee, Kenneth B., Jr., *Understanding atmospheric processes* 43-49
 MECHANIZATION (BISCUS/FACS) 103-108
 MESSAGE SWITCH 8-14
 MESSAGE TRUNKS 3-7
 METALLIC FACILITY TERMINALS (on the customer's premises) 90-95
 Michel, Walter S., *SMETDS takes the guesswork out of trunk design* 2-7
 MICS (Maintenance Inventory Control System) 181, 184-186
 Miller, John A., *HORIZON™ Communication System: custom service for small businesses* 271-275
Molecular beam epitaxy: new technique for growing crystals, Morton B. Panish 109-114
 MONOLAYER CRYSTAL 89, 113-114
 MULTIBUTTON ELECTRONIC TELEPHONE 272-275

N

- Nahabedian, Charles E., *HORIZON™ Communication System—innovation in system design and development* 276-281
 NETWORK CLOCK (No. 4 ESS) 316-318
Network management—beating the bottlenecks, Melchior J. DiCarlo-Cottone and Ernest Gomez 305-309
New 4A trunk circuits save space and power, Leonard E. Baltz, Jr. and Robert J. Falk 50-54
New testing capabilities for data services—the 921A, Scott M. Fitch 21-26
 921A DATA TEST SET 21-26
No. 3 ESS improves telephone services for country customers, Robert W. Foster 231-235
 No. 4 CROSSBAR 286-287
 No. 4 ESS DATA BASE 301-304
 No. 4 ESS OVERVIEW 290-295
No. 4 ESS—symbol of Bell System strength, William O. Fleckenstein 288-289
No. 4 ESS—through a wide-angle lens, Robert L. Aveyard and Michael B. Haverty 290-295
 Nutt, Wendell G., *MAT cable supplies low-cost trunks under city streets* 258-264

O

- Oberst, James F., *D4: up-to-date channel bank for digital transmission plant* 66-72
 OFFICE DATA ASSEMBLER (ODA) 302, 303
 1A, 1A1, 1A2 KEY-TELEPHONE SYSTEMS 78-85
1A ESS: newest, largest-capacity local switch cuts over early, Richard P. Almquist, David L. Carney, and Robert A. Estvander 15-20
 1A PROCESSOR 15-20
 OPERATOR SERVICES (TSPTS) 146-153
 OSCILLATORS, QUARTZ 137-142
 OVERSEAS TRUNKS, TESTING AUTOMATICALLY 164-169

P

- Pamm, Leonard R., *Transaction Network: data communications for metropolitan areas* 8-14
 Panish, Morton B., *Molecular beam epitaxy: new technique for growing crystals* 109-114
 PAPER RECORDS (conversion to computer records) 103-108
 PARAMETRIC TESTING, IC 124-130

Parker, Sam H., *Interoffice transmission for the city: analyzing the options* 174-179
 PIE (Price Increment Effect) 157-158
Planning local switching replacement with ESS: when and how?, Stanley W. Johnston, Herbert W. Kettler, and Alan R. Tedesco 58-65
 PLANNING METROPOLITAN NETWORKS 174-179
 POLLED ACCESS 8-14
 POLLUTION (atmospheric) 43-49
Polychip DIPs: quick-turnaround custom circuit designs, John H. Forster 208-214
 Pompeo, Anthony J., *Recycling PVC* 215-219
Preparing for future satellite systems, Neil F. Dinn 236-242
 PRICE INCREMENT EFFECT 157-158
 PROCESSOR, 1A 15-20
 PROM (Programmable Read-Only Memory) 277
 PULSE-CODE MODULATION 310-315
 PVC (POLYVINYL CHLORIDE) 215-219

Q

QUALITY CONTROL 37
 QUARTZ OSCILLATORS 137-142

R

RAIN-INDUCED SIGNAL ATTENUATION 237-242
 RAM (Random-Access Memory) 279
 RANDOM-ACCESS MEMORY 279
 READ-ONLY MEMORY 277
 RECORDED ANNOUNCEMENTS 249-252
Recycling PVC, Richard C. Donovan, Anthony J. Pompeo, and Emanuele Scalco 215-219
 Reed, Robert A., *Developing new features for No. 4 ESS* 296-300
 REM (Resource Engineering and Management) 265-270
 REMOTE TRUNK ARRANGEMENT (RTA) 146-153
 Render, Donald J., *DATAPHONE® Select-A-Station Service: improved transmission facilities for alarm systems* 243-247
 RESEST (Resource Estimator) 267-270
Resource Engineering and Management: a case history, Morris I. Bolsky and Jay T. Boyle 265-270
 ROM (Read-Only Memory) 279
 Rutkowski, Paul J., *Switching and signal handling* 310-315

S

SATELLITE COMMUNICATIONS 237-242
 SAU (Service Access Unit) 272, 274-275, 279
 Scalco, Emanuele, *Recycling PVC* 215-219
 Schnack, Dennis H., *Data-base administration: managing the giant* 301-304
 SEMICONDUCTOR CRYSTALS 109-114
 SEMICONDUCTOR MEMORIES 131-136
 SERVICE ACCESS UNIT 272, 274-275, 279
 SERVICE ORDERS (automatic processing) 96-102
 Shaye, Norman, *A better way of designing Tandem Tie Trunk Networks* 220-225
 SLC™ 40 SUBSCRIBER LOOP CARRIER SYSTEM 118-123
 SLIMS (Supply Line Inventory Management System) 181-185
 SMALL-BUSINESS TELEPHONE SYSTEM 271-275
SMETDS takes the guesswork out of trunk design, Walter S. Michel 2-7
 SOFTWARE CHANGE PROCEDURE 298
 SOFTWARE DEVELOPMENT SYSTEM 279-280
 SOURCE OVERWRITE SYSTEM 298
 STATISTICS OF ATMOSPHERIC POLLUTION 43-49
Switching and signal handling, Anthony J. Cirillo, Robert V. Jenness, and Paul J. Rutkowski 310-315
 SWITCHING (1A ESS) 15-20
 SWITCHING SYSTEM REPLACEMENT 58-65
 Synnott, III, J. Bruce, *Developing new features for No. 4 ESS* 296-300

T

T-CARRIER TERMINALS (D4 channel bank) 66-72
 Tedesco, Alan R., *Planning local switching replacement with ESS: when and how?* 58-65
 TERMINALS, CUSTOMER PREMISES FACILITY 90-95
 TESTER INDEPENDENT FORMAT 124-130
Testing overseas trunks—automatically, Karl C. Barlay and Richard E. DeVore 164-169
 TESTING SEMICONDUCTOR MEMORIES 133-136
The subscriber loop carrier system gets even better, Stephen J. Brolin, George E. Harrington, and G. Robert Leopold 118-123
 Thompson, Jr., Richard K., *COM KEY™ telephone systems—flexibility for small, growing businesses* 78-85
 3A CENTRAL CONTROL PROCESSOR 231-235
 13A ANNOUNCEMENT SYSTEM 249-252
 TIME-DIVISION SWITCHING 310-315
 TIME-DIVISION-SWITCHING NETWORK (No. 4 ESS) 310-315
 TIME-MULTIPLEXED SWITCH (No. 4 ESS) 310-315
 TIME-SLOT INTERCHANGE UNIT (No. 4 ESS) 310-315
Timing—marching to the same drum, Ivan D. Leer and Paul R. Wiley 316-318
 TIRKS (Trunks Integrated Record Keeping System) 5, 73-77, 176
 TRAFFIC SERVICE POSITION SYSTEM (TSPS) 146-153
Transaction Network: data communications for metropolitan areas, Leonard R. Pamm 8-14
 Trimble, David C., *HORIZON™ Communication System—innovation in system design and development* 276-281
 TRUNK CIRCUITS FOR THE 4A CROSSBAR SWITCHING SYSTEM 50-54
 TRUNK SUBGROUPS 306, 308
 Trupp, Ronald D., *Improving recorded-announcement service with magnetic bubbles* 249-252
 TSPS goes to the country, Thomas F. Arnold 146-153
 TTTN (Tandem Tie Trunk Network) 220-226
 TTTNDP (Tandem Tie Trunk Network Design Procedure) 225
 24C MEMORY 132, 133, 135, 136
 29A MEMORY DEVICE 250

U

Understanding atmospheric processes, Ramanathan Gnanadesikan and Kenneth B. McAfee, Jr. 43-49

V

Vincent, Thomas G., *MAT cable supplies low-cost trunks under city streets* 258-264

W

WAFER PROBERS 128, 135
 Webster, George H., *MAT cable supplies low-cost trunks under city streets* 258-264
 Weiss, C. Dennis, *HORIZON™ Communication System: custom service for small businesses* 271-275
 Weller, David C., *D4: up-to-date channel bank for digital transmission plant* 66-72
Where things are—in Common Language, Arthur J. Wright 192-197
 Wiley, Paul R., *Timing—marching to the same drum* 316-318
 WORD (Work Order and Record Details) DOCUMENT 6
 Wright, Arthur J., *Where things are—in Common Language* 192-197

Y

Yaple, Janet L., *Estimating demand for new products* 155-158
 Yostpille, John J., *BISCUS/FACS processes service orders automatically* 96-102

Z

Zacharias, Alfred, *Integrated circuit testing* 124-130